

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A film recorder comprising:
a film recording device configured to expose sequential frames of film media;
a single flat panel display device having a high resolution digital screen driven directly from a computer and configured to display sequentially separate color component images associated with a single composite color image;
an alignment unit coupled to the film recording device and to the flat panel display device, wherein the alignment unit is operative to position an optical axis of the flat panel display device with respect to an optical axis of the film recording device such that the film recording device can expose an individual selected frame of the film media to the separate color component images of the flat panel display so that registration of each color component of each pixel in the image is positionally repeatable; and
a shutter mechanism disposed between the film recording device and the flat panel display device for controlling exposure of the film media to each of the separate color component images in the frame for a desired amount of time.
2. (Canceled).
3. (Currently amended) The film recorder of claim 2 1
further including an external illumination source, wherein the external illumination source comprises one or more digital light projectors; and
wherein the one or more digital light projectors project hex chromatic color space images as backlight into the flat panel display, each said hex chromatic color space image corresponding to the color component image shown on the flat panel display.
4. (Previously presented) A film recorder system comprising:

a film recording device configured to expose sequential frames of film media;
a first flat panel display device having a high resolution screen and driven directly from a computer and configured to display first monochromatic color component image of a specific frame of a composite color image;

a second flat panel display device having a high resolution screen and driven directly from the computer and configured to display a second monochromatic color component image associated with the same specific frame;

a third flat panel display device driven having a high resolution screen and directly from the computer and configured to display a third monochromatic color component image associated with the image same specific frame;

an alignment unit coupled to the film recording device, to the first flat panel display device, to the second flat panel display device, and to the third flat panel display device, wherein the alignment unit is operative to position an optical axis of each one of the first, second and third flat panel display devices with respect to an optical axis of the film recording device such that the film recording device can expose an individual frame of the film media to the separate color component images of each one of the first, second and third flat panel display devices so that registration of each color component of each pixel in the composite image is positionally repeatable;

an optical combiner coupled to the first flat panel display device, to the second flat panel display device, and to the third flat panel display device, the optical combiner configured to optically combine the first monochromatic color component image, the second monochromatic color component image, and the third monochromatic color component image to form the composite image in the same specific frame at the film recording device; and

a shutter mechanism for controlling exposure of each of the sequential frames of the film media to each of the separate color component images in the specific frame for a desired amount of time.

5. (Previously presented) The film recorder of claim 4 wherein the film recording device is configured to exposes the frame of film media to the composite image formed simultaneously by the monochromatic color component images.

6. (Previously presented) The film recorder of claim 5 wherein each one of the first, second and third flat panel display devices is only capable of displaying a monochromatic image.

7. (Previously presented) The film recorder of claim 1 further comprising a color filter disposed between the external illumination source and the one flat panel display, wherein the color filter is a color associated with a color component of one of the separate color component images.

8. (Previously presented) The film recorder of claim 1 wherein the single flat panel display is also configured to display sequentially a first color component image associated with the selected frame, a second color component image associated with the selected frame and a third color component image associated with the frame and wherein the film recording device is operative to expose the frame to each of the color component images.

9. (Previously presented) The film recorder of claim 8 wherein the film recording device is operative to expose the frame of film media to the first color component image, then to the second color component image, and then to the third color component image.

10-11. (Canceled).

12. (Previously presented) A method for recording a sequence of composite images consisting of color component images onto corresponding sequential frames of film media comprising:

positioning at least one flat panel display device having a high resolution screen and driven directly from a computer with respect to an optical axis of a film recording unit;

displaying at least one color component image associated with an image on the one flat panel display device;

exposing a single frame of the film media to the one color component image on the one flat panel display; and

repeating the displaying and exposing steps for each frame of the film media corresponding to a frame source displayed on the screen until a sequence of the single frames is registered such that registration of each color component of each pixel is positionally repeatable.

13. (Original) The method of claim 12 further comprising providing illumination to the one flat panel display with an external illumination source selected from the group: LED, strobe lamp, digital light projector.

14. (Original) The method of claim of claim 13 wherein the external illumination comprises more than one digital light projector; and

wherein the more than one digital light projector illuminate the one flat panel display with images in the RGB and CMY color space.

15. (Previously presented) The method of claim 12 wherein said repeating step further comprises:

displaying a second color component image associated with the single frame on the one flat panel display device;

exposing the film media to the second color component image on the one flat panel display device;

displaying a third color component image associated with the image on the one flat panel display device; and

exposing the film media to the third color component image on the one flat panel display device.

16-17. (Canceled).

18. (Previously presented) The method of claim 12 further comprising:
positioning a second flat panel display with respect to the optical axis of the film
recording unit;

displaying a second color component image associated with the image on the
second flat panel display;

exposing the film media to the second color component image on the second flat
panel display;

positioning a third flat panel display with respect to the optical axis of the film
recording unit;

displaying a third color component image associated with the image on the third
flat panel display; and

exposing the film media to the third color component image on the third flat panel
display.

19-22. (Canceled).

23. (Previously presented) The method of claim 12 further comprising:
making a release print in response to the film media; and
displaying the release print to an audience.

24-35. (Canceled).

36. (Previously presented) The method of claim 23 further including
the step of:

enhancing illumination while recording directly from the sequence of the
composite images to intermediate media, including an internegative or interpositive, to minimize
the number of required film transfer processes in making the release print.

37. (New) An apparatus for registering images from a source digital display
device to individual frames of continuous movie film media comprising:

a film recording device configured to selectively and repeatedly expose the same individual frames of said film media;

an electronically addressable flat panel display device driven directly from a computer and controllable at pixel level, said flat panel display device being configured as a source to display sequences of a plurality of source static images, in color component form, each said plurality of static images being associated for exposure with said single individual frames of the film media; and

an alignment unit coupled to the film recording device and to the display device, wherein the alignment unit is configured to position the flat panel display device with respect to the film recording device such that the film recording device can expose the film media to the plurality of static images with positionally repeatable registration of each color component of each pixel and in order to minimize optical aberrations at said film media,

said flat panel display and said alignment unit cooperating to expose said individual frames of said film recording device so as to register final image features on said individual frames of said film media with resolution and contrast greater than inherent capabilities of said flat panel display and not presented by any single source static image of said flat panel display.

38. (New) The apparatus of claim 37, wherein the flat panel display device is one of the group: liquid crystal display (LCD), organic light emitting diode (OLED) display, plasma display, electro luminescent (EL) display, silicon crystal display, liquid crystal display on silicon (LCOS) and wherein the flat panel display is an array having at least 3480 x 2400 pixels.

39. (New) The apparatus of claim 37, wherein the alignment unit further comprises an X-Y-Z gimbal coupled to the flat panel display device, wherein the X-Y-Z gimbal is configured to adjust an orientation of the flat panel display with respect to the film recording device to compensate for said optical aberrations due to off-axis alignment between said film media and said flat panel display.

40. (New) The apparatus of claim 37 further comprising an illumination source disposed relative to said flat panel display on a side opposite from said film recording device and configured to increase output brightness of at least a portion of the display of the plurality of images and to illuminate said flat panel display with back light for reproduction of said final image by said film recording device.

41. (New) The apparatus of claim 40 wherein the illumination source provides different color illumination to different portions of the flat panel display device.

42. (New) A method of recording sequences of a plurality of images from a source digital display device onto individual frames of continuous film media, the method comprising:

positioning an optical axis of a display portion of an electronically addressable flat panel display that is driven directly from a computer and controllable at pixel level to be approximately parallel to an optical axis of a film recording device; and, for each sequence,

displaying a first image in color component form on the display portion of the flat panel display for a first duration;

exposing a first frame of the film media to the first image on the display portion for a second duration;

displaying a second image in color component form on the display portion of the flat panel display for a third duration; and

exposing said first frame of the film media to the second image on the display portion with positionally repeatable registration of each color component of each pixel for a fourth duration; and

repeating said displaying and exposing steps for each successive frame so as to register final image features on said individual frames of said film media with resolution and contrast greater than inherent capabilities of said flat panel display and not presented by any single source static image of said flat panel display.

43. (New) The method of claim 42, further comprising adjusting the second duration in response to the image to control said final image features.

44. (New) The method of claim 42 wherein external illumination is provided to increase brightness of at least a portion of the flat panel display for registering said final image features in the film media.

45. (New) The method of claim 42 wherein a resolution of the flat panel display is different from a resolution of an external illumination source and further including the step of spatially dithering to register said final image features;

wherein the external illumination source is an addressable source, such that the external illumination source illuminates different portions of the flat panel display with different illumination colors.